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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,584	08/08/2006	Takamasa Harada	5144533967	2298

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EXAMINER

LOVELL, LEAH S

ART UNIT	PAPER NUMBER
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2885

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,584

Applicant(s)

HARADA ET AL.

Examiner

Leah S. Lovell

Art Unit

2885

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Surface light source device having a light diffusion film comprising two phases with two differing refractive indices.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim, in general, is unclear. Specifically:

- Typically, the limitations of the claim begin after the word "comprising." Since claim 1 opens with both "having" and "comprising" it is unclear where the limitations begin. It appears that "a surface light source device having a light-emitting unit comprising" is the preamble and then the parts of the light-emitting unit follow comprising. However, in view of claim 6, it appears that "a light-emitting unit comprising a point light source" is one limitation of the surface light source device. For the purposes of this office action, the light emitting unit will be a point light source. It is suggested that this portion of the claim be revised to clearly indicate what is the preamble and where the limitations begin.

- "the reverse side" on line 3, is not previously defined and lacks proper antecedent basis.
- It is unclear where the prism pattern is located. Is it on the reflecting surface? Is there a separate prism sheet?
- Line 3 begins the "characterized in..." phrase. This phrase (extending until line 6 just before "comprising") seems to indicate that the prism pattern is characterized by the light-diffusing film.

It is suggested that the claim be reworked to clarify the above issues. It is further suggested that the claim be adapted to fit the following format:

A surface light source device having a light-emitting unit comprising:

[feature 1], [details of the feature, if desired/needed];

[feature 2] , [details of the feature, if desired/needed]; and

[feature 3] , [details of the feature, if desired/needed],

wherein [one of the above features] has [insert in specifics (e.g. in the case of the instant application, the columnar structures on lines 6-10)].

The above format would clearly outline what Applicant is regarding as their invention. For the purposes of this office action, it will be assumed that the device comprises: a light source; a light guide; a reflecting surface on a side of the light guide that opposes the light-emitting surface; a "prism pattern," which is an individual prism sheet located on the light-emitting side of the light guide; and a light-diffusing film on the light-emitting side of the light guide that has the limitations set forth in lines 6-10].

4. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. The claim states "...said light-emitting unit is positioned facing the center of the end surface of the light guide." Claim 1 states, "having a light-emitting unit comprising a point light source and a light guide..." It is unclear how the light-emitting unit (which the components of the unit are disclosed in claim 1 and include the light guide) can be positioned to face the end surface of the light guide. "Positioned to face" indicates that the light-emitting unit and the light guide are two independent parts as opposed to the light guide is a part of the light-emitting unit, as claimed in claim 1. For the purposes of this office action, based on the figures submitted it will be assumed that the "light-emitting unit" means the light source.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 7,004,610).

In regard to claim 1, as best understood, Yamashita discloses surface light source device having a light-emitting unit comprising a point light source [1] and a light guide [6], a reflecting surface [7] being provided on the reverse side of the light guide [figure 7], and also having a prism pattern [52], characterized in that a directional light-diffusing film [50] is provided beside the light-outputting surface of the light guide [figure 7] which diffuses and allows light to pass [figure 7; ray 19 passes both through the prism sheet and the light diffusing film], comprising two phases [3, 4] with differing refractive indices [column 10, lines 43-47], the

phase with the greater refractive index [4] including a plurality of regions [figures 2 and 3] with a columnar structure extending in the direction of the thickness of the film [figures 1, 2, 3 and 7; column 10, lines 62-65], said columnar structure being perpendicular to the normal direction of the film [figures 1 and 7]. However, Yamashita does not disclose the maximum diffusion angle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the higher refractive index to have a maximum diffusion angle between 10° - 40° , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 223. One would be motivated to do so for maximum brightness viewable from the light emitting device.

In regard to claim 5, Yamashita discloses the claimed invention as indicated above. However, Yamashita does not disclose said columnar structure has a structure such that the refractive index varies gradually along the axis of said columnar structure. It would have been obvious to one of ordinary skill in the art at the time of the invention to include varied refractive indexes in the columnar structures of Yamashita to achieve the claimed invention. As disclosed in Yamashita, the motivation for the combination would be to control the outputted light luminance distribution characteristics and the functionality appearance effect. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

Regarding claim 6, Yamashita discloses said light-emitting unit [or light source 1] is positioned facing the center of the end surface of the light guide [figures 2-4].

In regard to claim 7, Yamashita discloses that said light-emitting unit [or light source 1] is positioned facing the angled end surface of the light guide [figures 18-20].

7. Claims 2-4 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 7,004,610) as applied to claim 1 above, and further in view of Stevenson et al. (US 6,846,089).

Regarding claim 2, Yamashita discloses the claimed invention as indicated above. Yamashita further discloses an adhesive [44] between the light-diffusion film and the light guide [figure 15]. However, Yamashita does not disclose diffusive particles disposed in the adhesive. Stevenson discloses the use of an adhesive having diffusive properties by incorporating microparticles having a diameter of a few micrometers [column 15, lines 2-8]—a few typically means 2-5, which meets the limitation of 0.1-50 μm . It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate microparticles, like those of Stevenson, into the adhesive layer of Yamashita. One would be motivated to do so because it is well-known in the art to incorporate diffusion particles into an adhesive layer of a light guide device to further promote even brightness in the light emitted from the device.

In regard to claims 3 and 4, Yamashita and Stevenson disclose the claimed invention as indicated above. However, the range of sizes and the refractive indices of the minute particles are not disclosed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use minute particles with diameters in the range of 1-100 nm whose refractive index is 1.8 or greater and the overall light diffusing adhesion agent has a refractive index of 1.55 or greater, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 223. One would be motivated to do so because optimization of the refractive indices of the adhesion agent along with the microparticles and size of the smaller particles, which would encourage sharp diffraction of light resulting in light substantially

perpendicular to the surface of the light guide, is highly desired for optimum brightness of the overall system.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited as having a diffusion portion composed of a plurality of portions having different refractive indexes.

- Umemoto et al. (US 2002/0015314)
- Okabe et al. (US (2002/0181111)
- Uekita et al. (US 2004/0105052)
- Suzuki et al. (US 6,612,710)
- Yang (US 6,893,136)
- Nakano (US 6,943,855)
- Katsu et al (US 7,064,741)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah S. Lovell whose telephone number is (571) 272-2719. The examiner can normally be reached on Monday through Friday 7:45 a.m. until 4:15 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leah Lovell
Examiner
3 January 2008


JONG-SUK (JAMES) LEE
SUPERVISORY PATENT EXAMINER